# LS-377

## 3.5 Miniboard

### User's Manual

Edition 1.1
2011/01/20



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# Packing List:

Please check the package content before you starting using the board.

## Hardware:

LS-377 3.5'' Miniboard x 1

## Cable Kit:



**SATA Cable x 1**
**(OALSATA-L)**



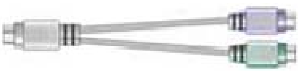
**DC Power Cable x 1**
**(OALDC-2)**



**Audio Cable x 1**
**(OALPJ-HDUNB)**



**COM Port Cable x 1**
**(OALES-BKU1NB)**



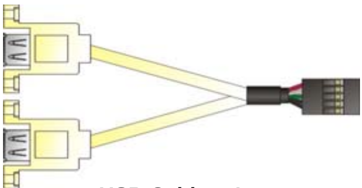
**PS/2 Keyboard & Mouse Cable x 1**
**(OALPS2/MK)**



**1 to 3 Power Output Cable x 1**
**(OAL4P-2)**



**SATA Power Cable x 1**
**(OAL4P-S1)**



**USB Cable x 1**
**(OALUSBA-3)**




**CPU Cooler x 1**
**(OHS-P-M-G)**



**DVI Module With DVI Cable x 1**
**(BADPDVI-A + OALDVI-P)**

## Printed Matters:

**Driver CD (Including User's Manual) x 1**

# Index

# Chapter 1 <Introduction>

## 1.1 <Product Overview>

**LS-377Q** the new generation of the 3.5 miniboard, supports Intel Core i7, Core i5 and Core i3 Processors and features Intel QM57 chipset, integrated HD Graphics, DDR3 memory, REALTEK High Definition Audio, Serial ATA and 1 x Intel Gigabit LAN.

### Intel Arrandale and Clarkfield Processor

The board supports Intel Core i7, Core i5 and Core i3 Processors with, 8MB Intel® Smart Cache, to provide more powerful performance than before.

### New features for Intel QM57 chipset

The board integrates Intel QM57 chipset, to provide new generation of the mobile solution, supports integrated HD Graphics, DDR3 800/1066 MHz memory, built-in high speed mass storage interface of Serial ATA, High Definition Audio with 7.1 channels surrounding sound.

### All in One multimedia solution

Based on Intel QM57 chipset, the board provides high performance onboard graphics, 24-bit dual channel LVDS interface, DVI and 7.1 channels High Definition Audio, to meet the very requirement of the multimedia application.

### Flexible Extension Interface

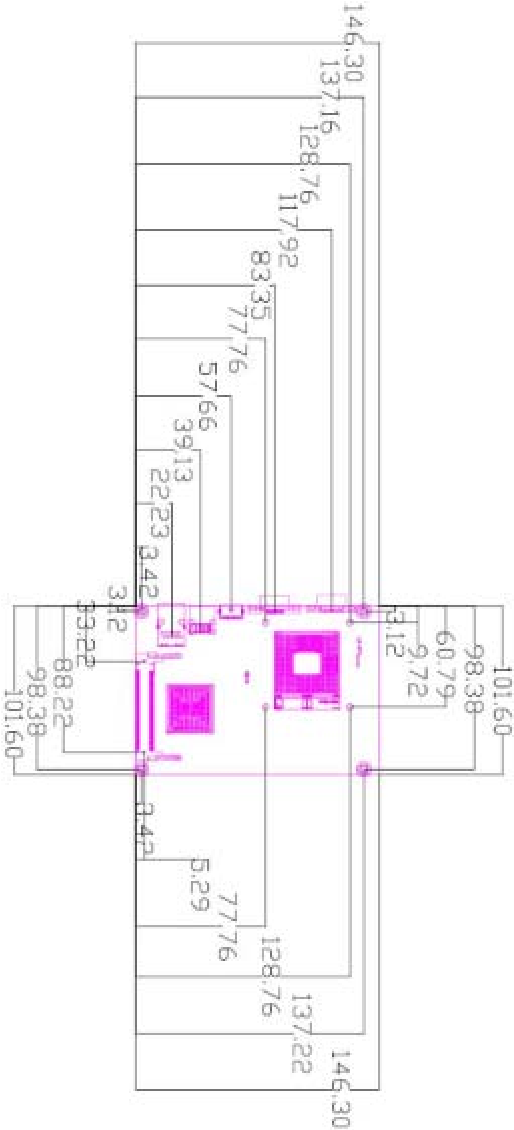
The board provides, one mini-PCIE socket, one mini-PCI socket.

# 1.2 <Product Specification>

| General Specification | |
|---|---|
| Form Factor | 3.5'' Miniboard |
| CPU | Intel® Core™ i7, Core™ i5, Core™ i3, Celeron®, and Pentium® Mobile Processor<br>Package type: **rPGA988A** |
| Memory | 1 x DDRIII SO-DIMM 800/1066 MHz up to 4GB |
| Chipset | Intel QM57 |
| Real Time Clock | Chipset integrated RTC with onboard lithium battery |
| Watchdog Timer | Generates a system reset with internal timer for 1min/s ~255min/s |
| Power Management | Supports ACPI 2.0 compliant, |
| Serial ATA Interface | 2 x serial ATAII interface with 300MB/s transfer rate |
| VGA Interface | Intel integrated extreme GMA 4500MHD (Graphic Media Accelerator) Technology |
| LVDS Interface | Onboard 24-bit dual channel LVDS connector with +3.3V/+5V/+12V supply |
| DVI Interface | DVI interface |
| Audio Interface | Realtek ALC888 HD Audio |
| LAN Interface | 1 x Intel 82574L Gigabit LAN |
| GPIO Interface | Onboard programmable 8-bit Digital I/O interface |
| Extended Interface | 1 x Mini PCIE socket, 1 x Mini PCI socket to support Mini PCI Type IIIA |
| Internal I/O Port | 1 x RS232/422/485, 1 x SMBUS, 1 x GPIO port, 4 x USB ports, 1 x IrDA, 2 x Serial ATA, 1x LVDS, 1 x DIO, 1x LCD inverter connector, 1 x Audio connector and 1 x DCOUT connector |
| External I/O Port | 1 x PS/2 Keyboard/Mouse Port, 1 x RJ45 LAN ports, 1 x VGA port, 2 x USB2.0 ports, 1 x RS232 port |
| Power Requirement | 9~24V full range DC Input |
| Dimension | 146mm x 101mm |
| Temperature | Operating within 0~60 centigrade<br>Storage within –20~85 centigrade |
| **Ordering Code** | |
| LS-377Q | Intel Arrandale + QM57 Onboard VGA, LVDS, LAN, USB2.0, HD Audio, SATA, SMBUS, Mini PCI and PCIE mini card |
| MPX-7202 | PCI Express mini card supports<br>**2 x USB 3.0 provides up to 4.8Gbps of transferring rate.** |

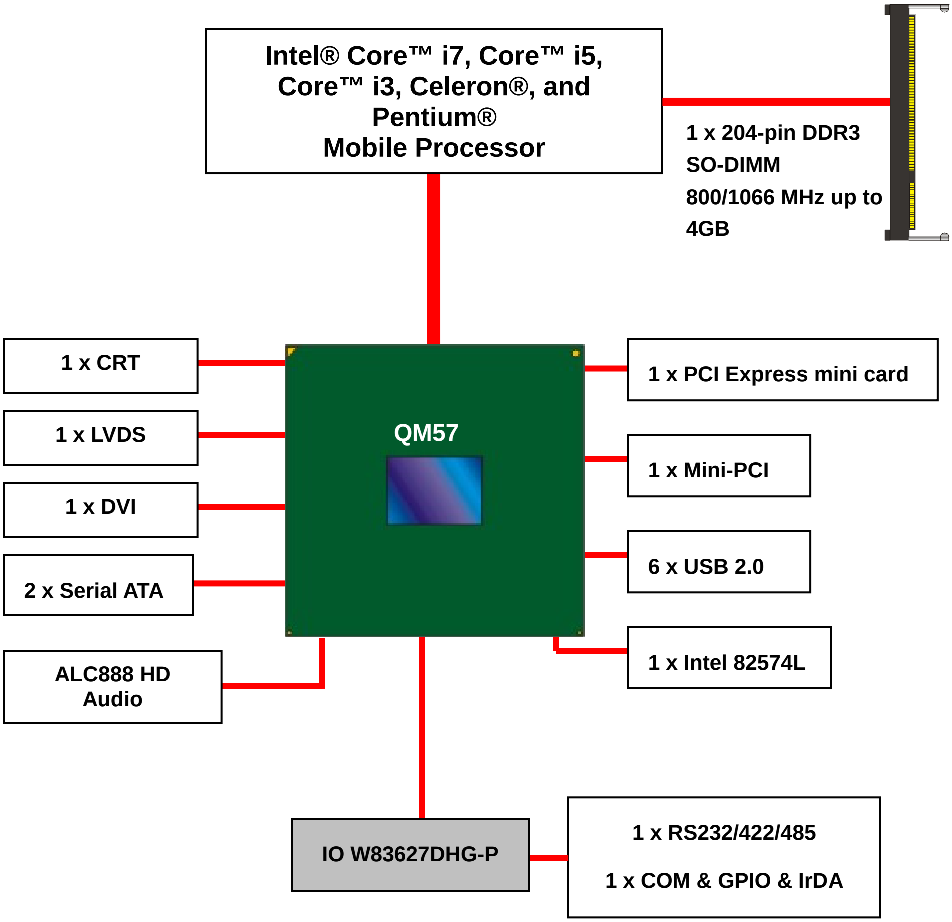
The specifications may be different as the actual production.
For further product information please visit the website at http://www.commell.com.tw

# 1.3 <Mechanical Drawing>



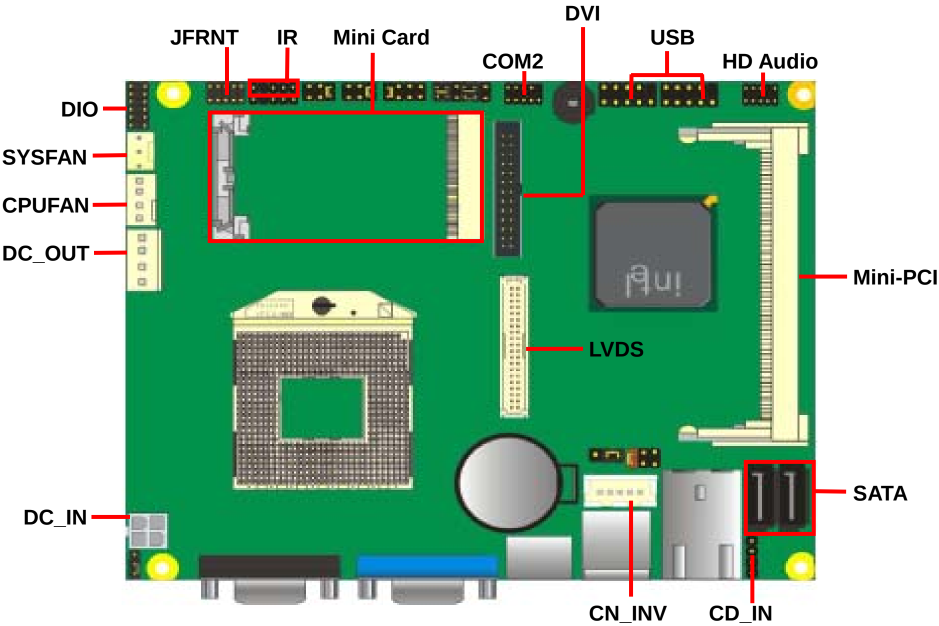

**Unit: inch**

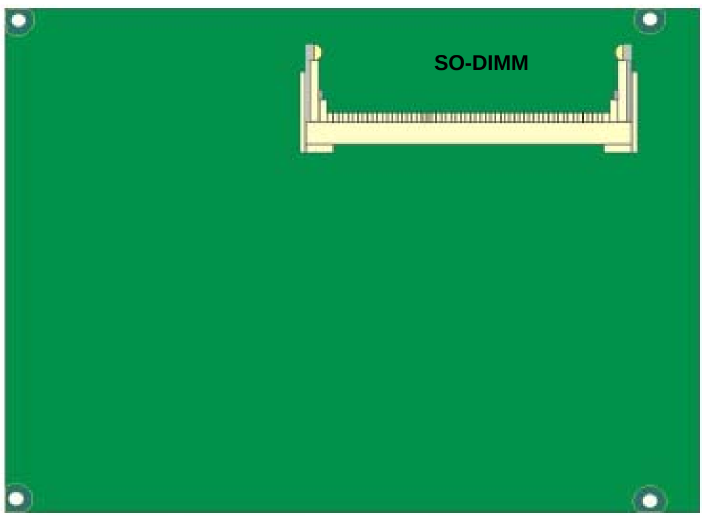
# 1.4 <Block Diagram>

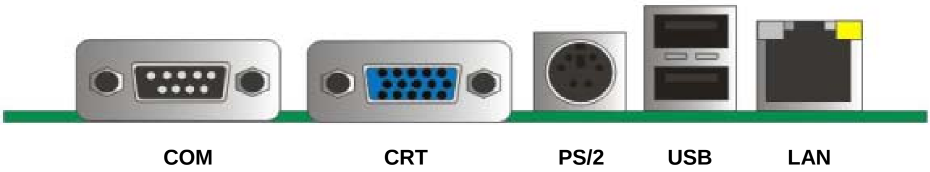


# Chapter 2 <Hardware Setup>

## 2.1 <Connector Location>

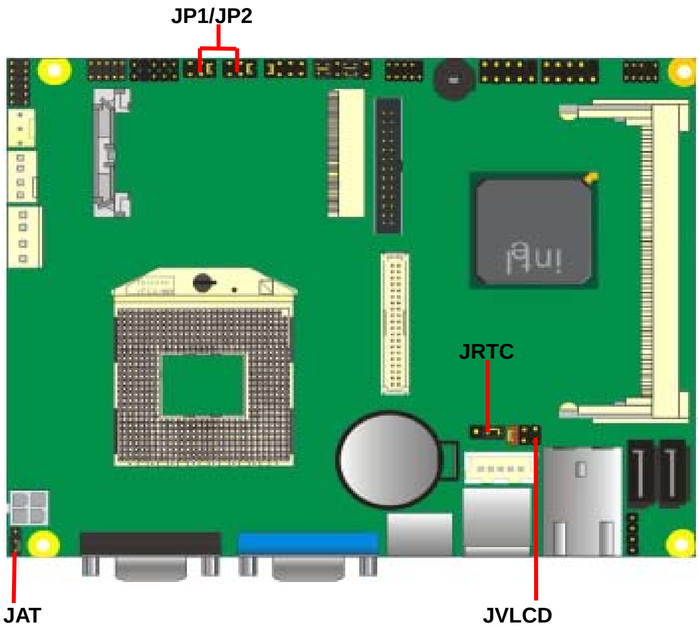



COM
CRT
PS/2
USB
LAN

## 2.2 <Jumper Location & Reference>

| Jumper | Function |
|---|---|
| JRTC | CMOS Operating/Clear Setting |
| JVLCD | Panel Voltage Setting |
| JAT | Power mode select |
| JP1 | Com1 Voltage Setting |
| JP2 | Com2 Voltage Setting |



Jumper: **JAT**
Type: onboard 3-pin header

| Power Mode | JAT |
|---|---|
| **AT Mode** | **1-2** |
| **ATX Mode** | **2-3** |
| **Default setting: ATX Mode** |   |

Jumper: **JP1 (COM 1)**
Type: onboard 6-pin header

| Power Mode | JP1 |
|---|---|
| **Pin1 with 5V signal** | **1-2,5-6** |
| **Pin9 with 12V signal** | **3-4,5-6** |
| **Default setting: 5-6** |   |

Jumper: **JP2 (COM 2)**
Type: onboard 6-pin header

| Power Mode | JP2 |
|---|---|
| **Pin1 with 5V signal** | **1-2,5-6** |
| **Pin9 with 12V signal** | **3-4,5-6** |
| **Default setting: 5-6** |   |

# 2.3 <Connector Reference>

## 2.3.1 <Internal Connectors>

| Connector | Function | Remark |
|---|---|---|
| CPU | Socket rPGA989 for PGA**988** CPU | |
| SO-DIMM | 204 -pin DDR3 SO-DIMM socket | |
| SATA1/2 | 7-pin Serial ATA connector | |
| DC_IN | DC 9~24V input connector | |
| CN_AUDIO | 5 x 2-pin audio connector | |
| CD_IN | 4-pin CD-ROM audio input connector | |
| CN_DIO | 6 x 2-pin digital I/O connector | |
| CN_USB 1/2 | 5 x 2-pin USB connector | |
| CPUFAN | 4-pin CPU cooler fan connector | |
| SYSFAN | 3-pin system cooler fan connector | |
| CN_LVDS | 20 x 2-pin LVDS connector | |
| CN_INV | 5-pin LCD inverter connector | |
| CN_IR | 5-pin IrDA connector | |
| JFRNT | 10-pin front panel switch/indicator connector | |
| Mini-PCI | 124-pin Mini-PCI socket Type IIIA | |
| Mini-PCIE | 52-pin Mini-PCIE socket | |
| CN_COM2 | 9-pin RS422/485/232 | |
| JAT | Power mode select | |

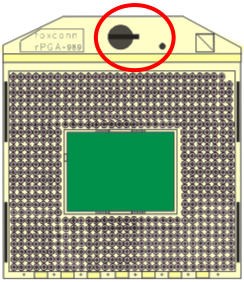
## 2.3.2 <External Connectors>

| Connector | Function | Remark |
|---|---|---|
| RJ45 | RJ45 LAN connector | |
| COM1 + CRT | COM1 Connect DB15 and analog VGA connector | |
| PS/2 | PS/2 keyboard and mouse connector | |
| USB | 2 x USB | |

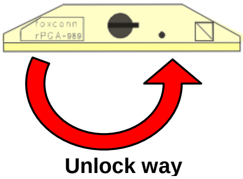
# 2.4 <CPU and Memory Setup>

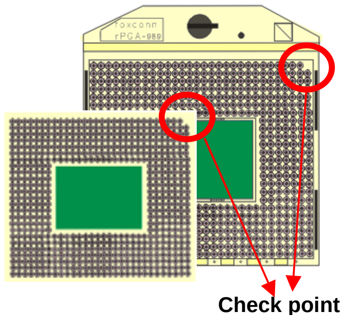
## 2.4.1 <CPU Setup>

The board comes with the socket rPGA989 for Intel **Arrandale and Clarkfield** Processor, Intel® Smart 8MB Cache. Please follow the instruction to install the CPU properly.

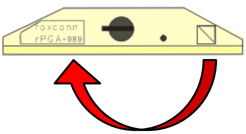


**1. Use the flat-type screw drive to unlock the CPU socket**



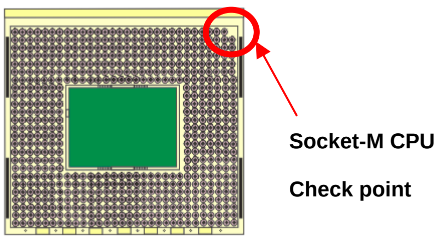




**2. Follow the pin direction to install the processor on the socket**



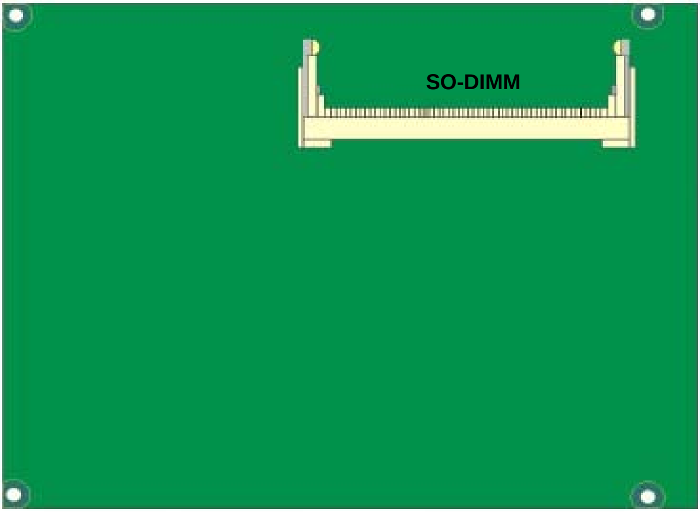
**3. Lock the socket**

**4. CPU socket has 989 pins**



## 2.4.2 <Memory Setup>

The board provides 1 x 204-pin DDR3 SO-DIMM to support 800/1066MHz DDR3 memory module up to 4GB.



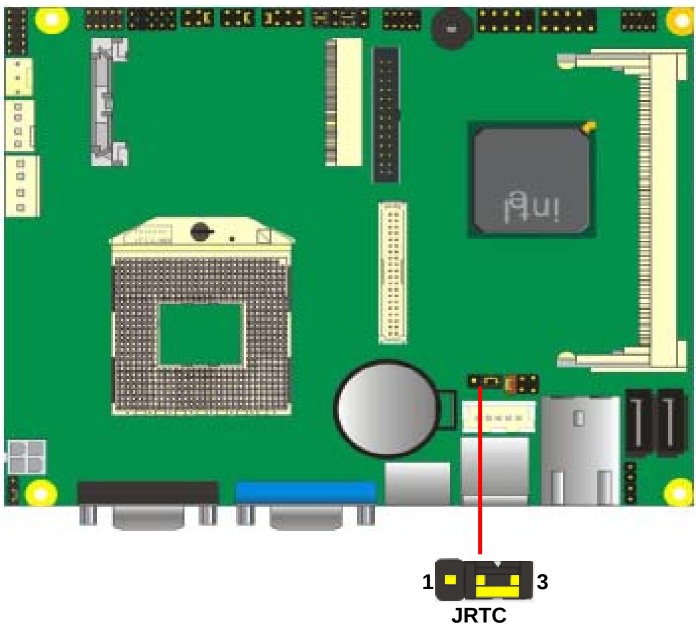
## 2.5 <CMOS Setup>

The board’s data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, here is how to proceed to clear (reset) the CMOS to its default values.

**Jumper: JRTC**
**Type: Onboard 3-pin jumper**

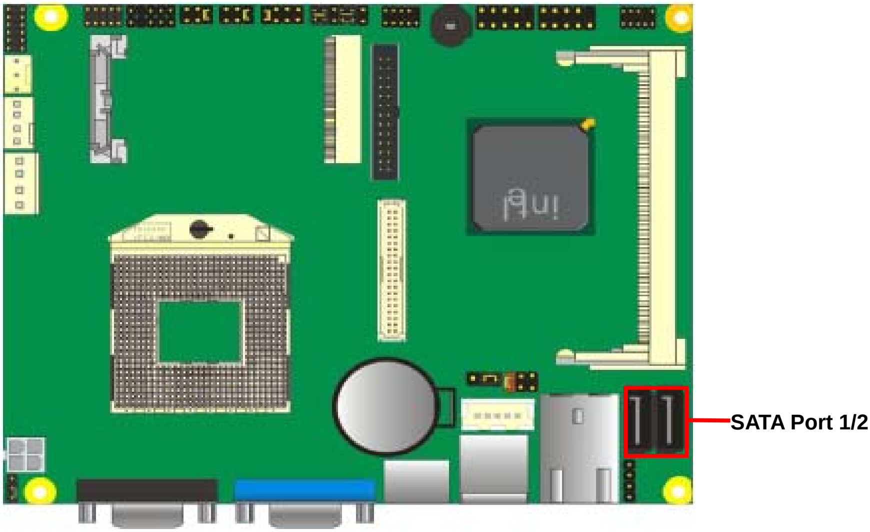
| JRTC | Mode |
|---|---|
| 1-2 | Clear CMOS |
| 2-3 | Normal Operation |

Default setting: 2-3



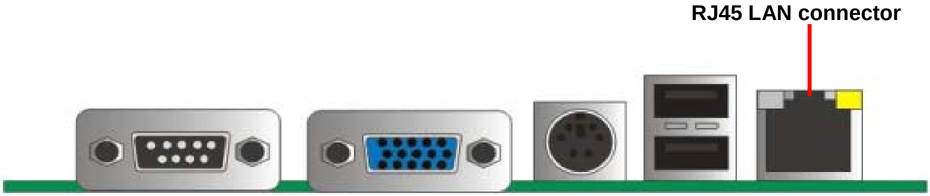
## 2.6 <Serial ATA Interface>

Based on Intel QM57, the board provides four Serial ATAII interfaces with up to 300MB/s of transfer rate.



## 2.7 <Ethernet Interface>

The board integrates with one Intel PCI Express Gigabit Ethernet controllers, as the PCI Express x 1 can speed up to 250MB/s of transfer rate instead of late PCI bus with 133MB/s of transfer rate. The Intel Gigabit Ethernet supports triple speed of 10/100/1000Base-T, with IEEE802.3 compliance and Wake-On-LAN supported.



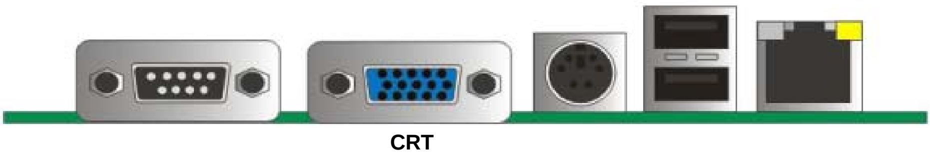
# 2.8 <Onboard Display Interface>

Based on Intel **Arrandale** CPU with built-in HD Graphic, the board provides one DB15 connector on real external I/O port, one 40-pin LVDS interface with 5-pin LCD backlight inverter connector optional or Secondary CRT connector and provides optional 26-pin DVI interface.

The board provides dual display function with clone mode and extended desktop mode for CRT, LCD and DVI.

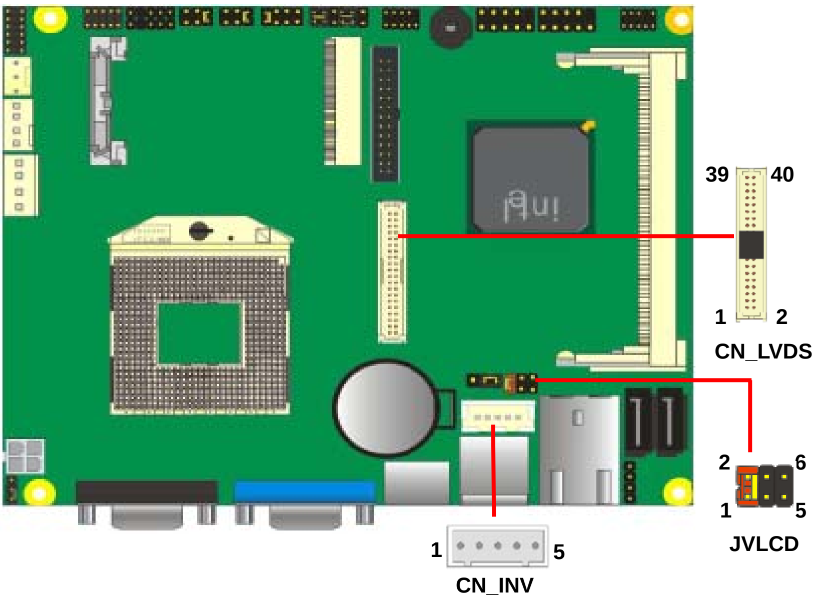
## 2.8.1 <Analog Display>

Please connect your CRT or LCD monitor with DB15 male connector to the onboard DB15 female connector on rear I/O port or optional Secondary CRT connect.

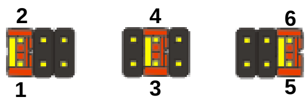


## 2.8.2 <Digital Display>

The board provides one 40-pin LVDS connector for 24-bit single/dual channel panels, supports up to 1920 x 1200 (UXGA) resolution, with one LCD backlight inverter connector and one jumper for panel voltage setting.




*Effective patterns of connection: 1-2 / 3-4 / 5-6*




*Warning: others cause damages*

Connector: **CN_INV**
Type: 5-pin LVDS Power Header

| Pin | Description |
|---|---|
| 1 | +12V |
| 2 | Reserved (Note) |
| 3 | GND |
| 4 | GND |
| 5 | ENABKL |

Note: Reserved for MB internal test
Please treat it as NC.

Connector: **JVLCD**
Type: 6-pin Power select Header

| Pin | Description |
|---|---|
| 1-2 | LCDVCC **(3.3V)** |
| 3-4 | LCDVCC **(5V)** |
| 5-6 | LCDVCC **(12V)** |

**Default: 1-2**

Connector: **CN_LVDS**
Type: onboard 40-pin connector for LVDS connector
Connector model: **HIROSE DF13-40DP-1.25V**

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 2 | LCDVCC | 1 | LCDVCC |
| 4 | GND | 3 | GND |
| 6 | ATX0- | 5 | BTX0- |
| 8 | ATX0+ | 7 | BTX0+ |
| 10 | GND | 9 | GND |
| 12 | ATX1- | 11 | BTX1- |
| 14 | ATX1+ | 13 | BTX1+ |
| 16 | GND | 15 | GND |
| 18 | ATX2- | 17 | BTX2- |
| 20 | ATX2+ | 19 | BTX2+ |
| 22 | GND | 21 | GND |
| 24 | ACLK- | 23 | BTX3- |
| 26 | ACLK+ | 25 | BTX3+ |
| 28 | GND | 27 | GND |
| 30 | ATX3- | 29 | BCLK- |
| 32 | ATX3+ | 31 | BCLK+ |
| 34 | GND | 33 | GND |
| 36 | DDCPCLK | 35 | N/C |
| 38 | DDCPDATA | 37 | N/C |
| 40 | N/C | 39 | N/C |

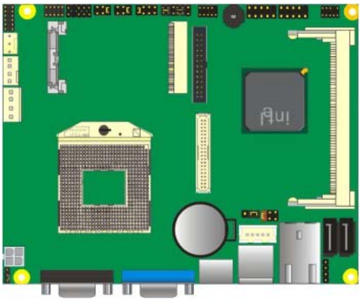
To setup the LCD, you need the component below:

1. A panel with LVDS interfaces.
2. An inverter for panel's backlight power.
3. A LCD cable and an inverter cable.

**For the cables, please follow the pin assignment of the connector to make a cable, because every panel has its own pin assignment, so we do not provide a standard cable; please find a local cable manufacture to make cables.**

## LCD Installation Guide:

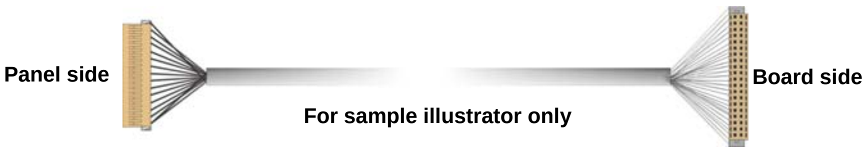
1. Preparing the **LS-377**, **LCD panel** and the **backlight inverter**.



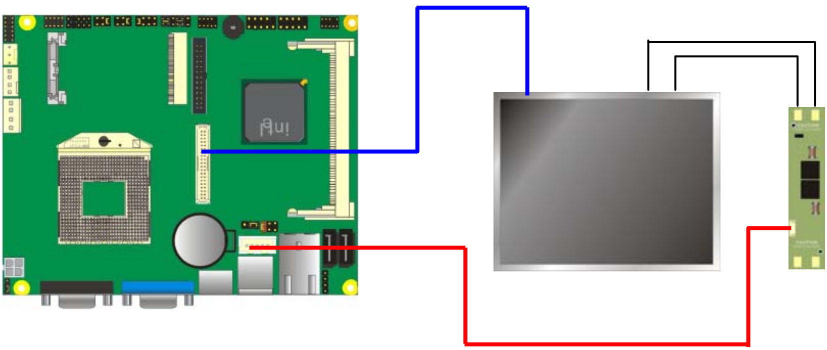





2. Please check the datasheet of the panel to see the voltage of the panel, and set the jumper **JVLCD** to +12V or +5V or +3.3V.
3. You would need a LVDS type cable.




4. To connect all of the devices well.



After setup the devices well, you need to select the LCD panel type in the BIOS.

The panel type mapping is list below:

| BIOS panel type selection form (BIOS Version:1.0) | | | |
|---|---|---|---|
| **18-bit Single channel** | | **24-bit Dual channel** | |
| **NO.** | **Output format** | **NO.** | **Output format** |
| 1 | 640 x 480 | 11 | 1280 x 768 |
| 2 | 800 x 480 | 12 | 1280 x 1024 |
| 3 | 800 x 600 | 13 | 1600 x 1200 |
| 4 | 1024 x 768 | 14 | 1920 x 1080 |
| 5 | 1280 x 800 | 15 | 1920 x 1200 |
| **18-bit Dual channel** | | | |
| 6 | 1280 x 768 | | |
| **24-bit Single channel** | | | |
| 7 | 1024 x 768 | | |
| 8 | 1280 x 768 | | |
| 9 | 1280 x 800 | | |
| 10 | 1366 x 768 | | |

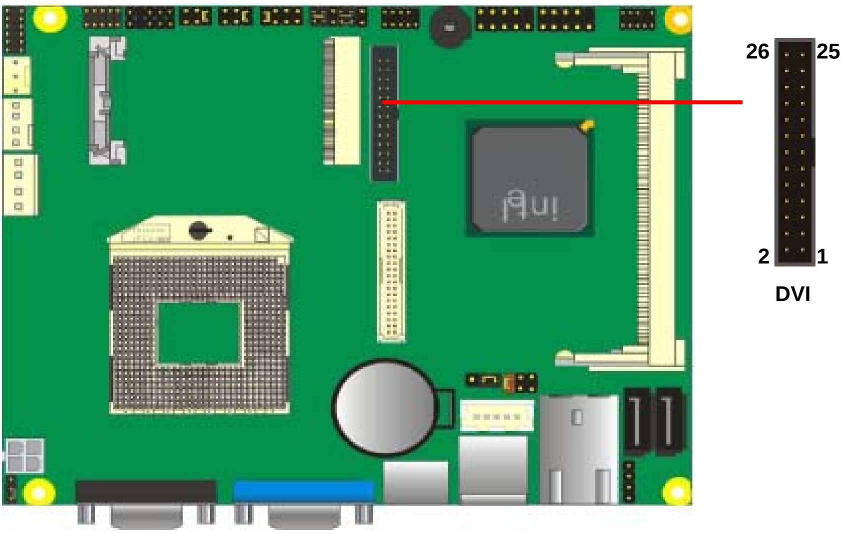
### 2.8.3 <DVI Interface>

The board provides an option 26-pin DVI interface

Connector: **CN_DVI**

Connector type: 26-pin header connector (pitch = 2.00mm)

| Pin Number | Assignment | Pin Number | Assignment |
|---|---|---|---|
| 1 | TX1+ | 2 | TX1- |
| 3 | Ground | 4 | Ground |
| 5 | TXC+ | 6 | TXC- |
| 7 | Ground | 8 | +5V |
| 9 | N/C | 10 | N/C |
| 11 | TX2+ | 12 | TX2- |
| 13 | Ground | 14 | Ground |
| 15 | TX0+ | 16 | TX0- |
| 17 | N/C | 18 | HPDET |
| 19 | DDCDATA | 20 | DDCCLK |
| 21 | GND | 22 | N/C |
| 23 | N/C | 24 | N/C |
| 25 | N/C | 26 | N/C |



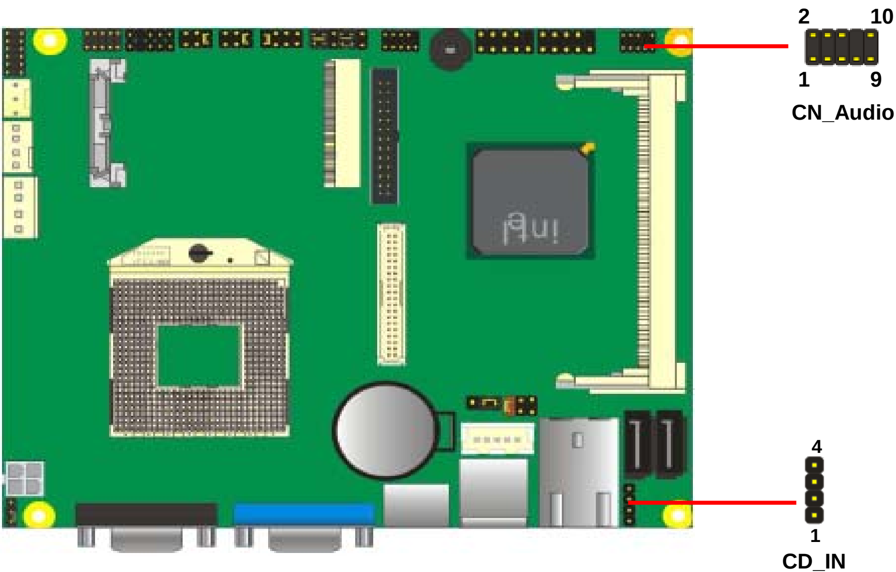
## 2.9 <Integrated Audio Interface>

The board integrates onboard audio interface with REALTEK ALC888 codec, with Intel next generation of audio standard as High Definition Audio, it offers more sound and other advantages than former ALC888 audio compliance.

The main specifications of ALC888 are:

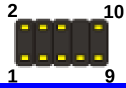
- **High-performance DACs with 100dB S/N ratio**
- **8 DAC channels support 16/20/24-bit PCM format for 7.1 audio solution**
- **16/20/24-bit S/PDIF-OUT supports 44.1K/48K/96kHz sample rate**
- **Compatible with ALC888**
- **Meets Microsoft WHQL/WLP 2.0 audio requirements**

The board provides 7.1 channels audio phone jacks on rear I/O port, and Line-in/MIC-in ports for front I/O panel through optional cable.



**Connector: CN_AUDIO**

Type: 10-pin (2 x 5) header (pitch = 2.54mm)




| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | MIC_L | 2 | Ground |
| 3 | MIC_R | 4 | Reserve |
| 5 | Speaker_R | 6 | MIC Detect |
| 7 | SENSE | 8 | N/C |
| 9 | Speaker_L | 10 | Speaker Detect |

**Connector: CDIN**

Type: 4-pin header (pitch = 2.54mm)

| Pin | Description |
|---|---|
| 1 | CD – Left |
| 2 | Ground |
| 3 | Ground |
| 4 | CD – Right |



## 2.10 <GPIO and SMBUS Interface>

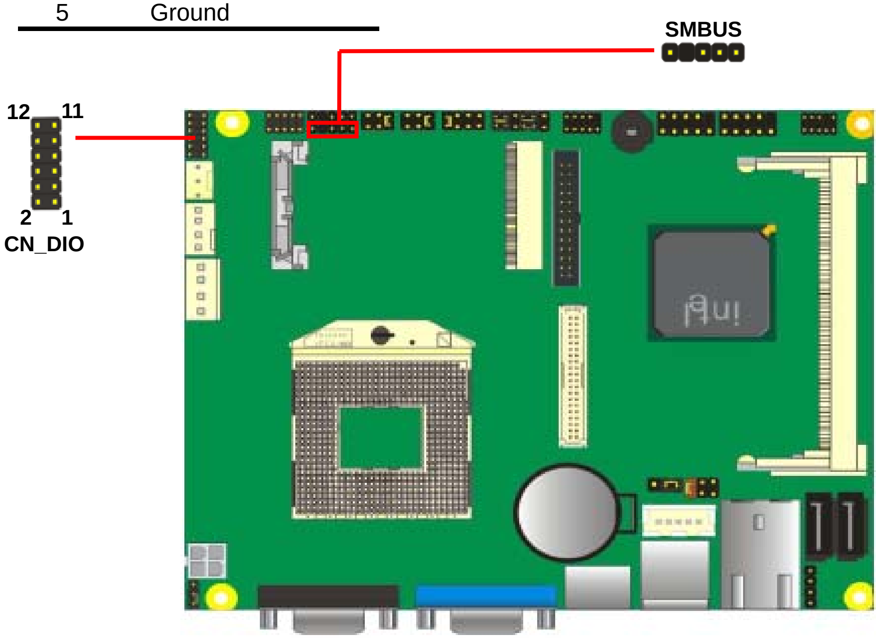
The board provides a programmable 8-bit digital I/O interface; you can use this general purpose I/O port for system control like POS or KIOSK.

Connector: **CN_DIO**
Type: 12-pin (6 x 2) header (pitch = 2.0mm)

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | Ground | 2 | Ground |
| 3 | GP10 | 4 | GP14 |
| 5 | GP11 | 6 | GP15 |
| 7 | GP12 | 8 | GP16 |
| 9 | GP13 | 10 | GP17 |
| 11 | VCC | 12 | +12V |

Connector: **CN_SMBUS**
Type: 5-pin header for SMBUS Ports

| Pin | Description |
|---|---|
| 1 | VCC |
| 2 | N/C |
| 3 | SMBDATA |
| 4 | SMBCLK |
| 5 | Ground |



# 2.11 <Power Supply>

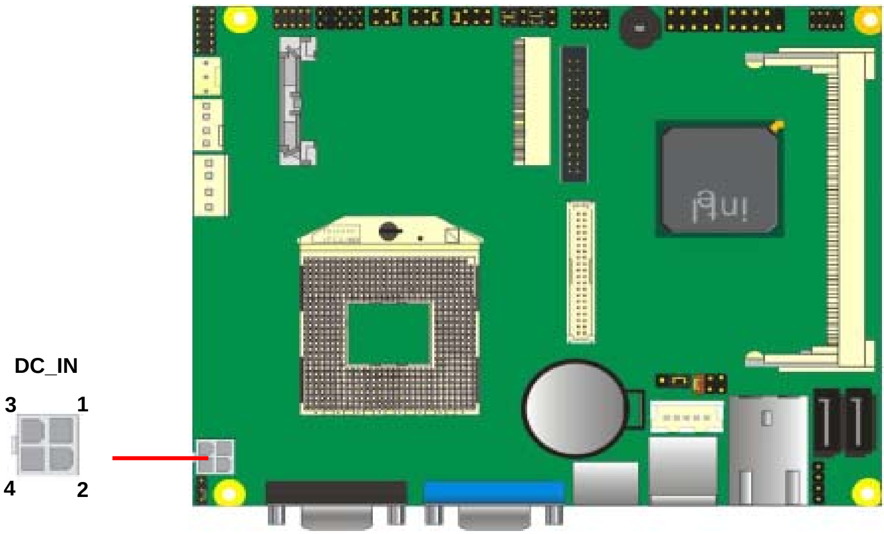
## 2.11.1 <Power Input>

The board requires onboard 4-pin DC-input connector voltage range is from 9V to 24V, or onboard 20-pin ATX2.0, for the input current, please take a reference of the power consumption report on appendix.

Connector: **DC_IN**

Type: 4-pin DC power connector

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | Ground | 2 | Ground |
| 3 | +9~24V | 4 | +9~24V |



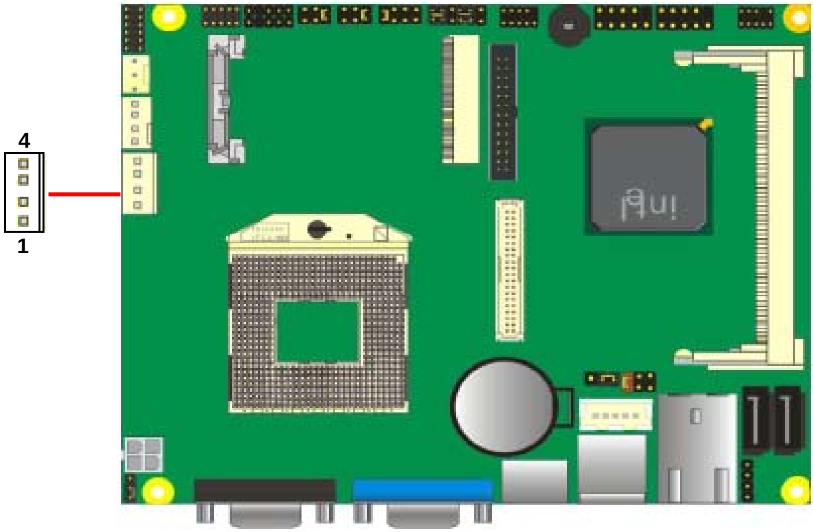
## 2.13.2 <Power Output>

Connector: **DC_OUT**

Type: 4-pin connector for +5V/+12V **output**

| Pin | Description |
|---|---|
| 1 | +12V |
| 2 | GND |
| 3 | GND |
| 4 | +5V |

**Note: Maximum output current 12V/1A, 5V/1A**

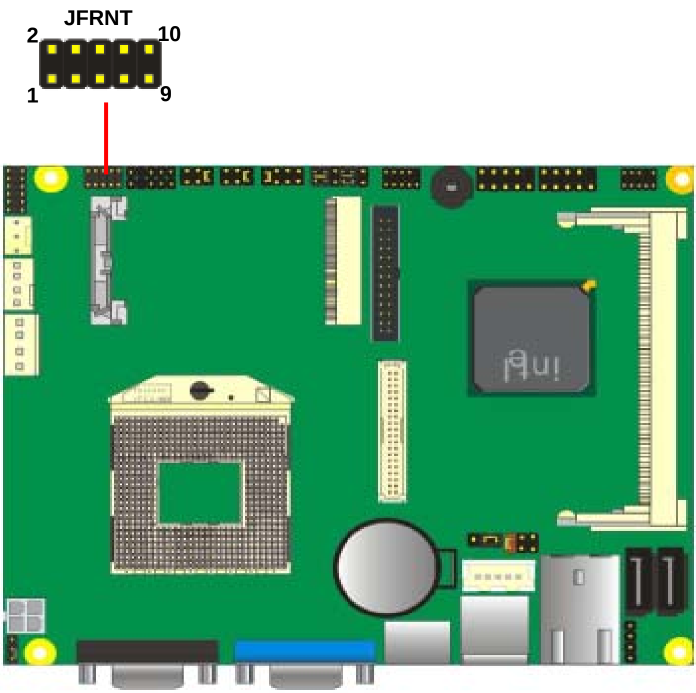


## 2.12 <Switch and Indicator>

The **JFRNT** provides front control panel of the board, such as power button, reset and beeper, etc. Please check well before you connecting the cables on the chassis.

Connector: **JFRNT**
Type: onboard 10-pin (2 x 5) 2.54-pitch header

| Function | Signal | PIN | | Signal |
|---|---|---|---|---|
| **Power** | PWRBT- | 1 | 2 | PWRBT+ |
| **Speaker** | SPK- | 3 | 4 | SPK+ |
| **HDD LED** | HLED- | 5 | 6 | HLED+ |
| **Power LED** | GND | 7 | 8 | PWLED+ |
| **Reset** | Reset- | 9 | 10 | GND |

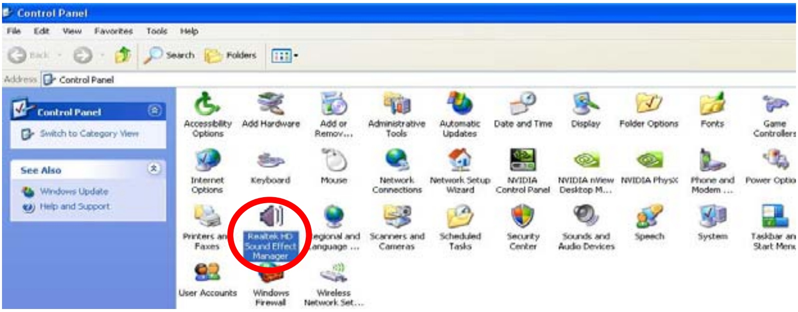


# Chapter 3 <System Setup>

## 3.1 <Audio Configuration>

The board integrates Intel® QM57 with REALTEK® ALC888 codec. It can support 2-channel or 7.1 channel sound under system configuration. Please follow the steps below to setup your sound system.

1. Install REALTEK HD Audio driver.
2. Lunch the control panel and Sound Effect Manager.




3. Select Speaker Configuration

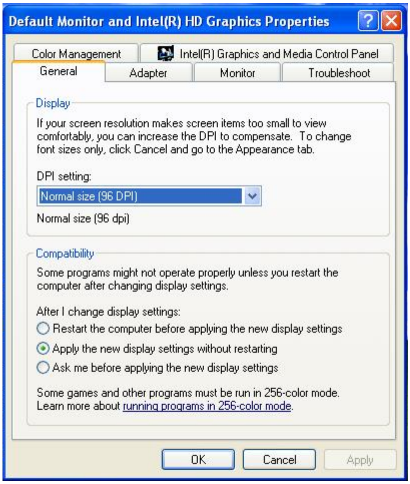


# 3.2 <Display Properties Setting>

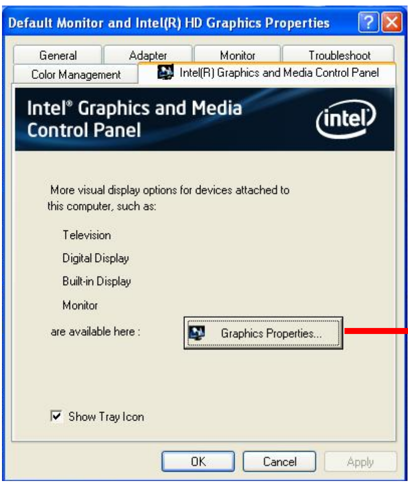
Based on Intel GM45 GMCH with GMA 4500MHD (Graphic Media Accelerator), the board supports two DACs for display device as different resolution and color bit.

Please install the Intel Graphic Driver before you starting setup display devices.

1. Click right button on the desktop to lunch **display properties**




2. Click **Advanced** button for more specificity setup.




**Click Graphics Properties... for advanced setup**

4. This setup options can let you define each device settings.

**Click Monitor to setup the CRT monitor for Resolution and Refresh Rate**




**Click Intel® Dual Display Clone to setup the dual display mode as same screen**

# Chapter 4 <BIOS Setup>

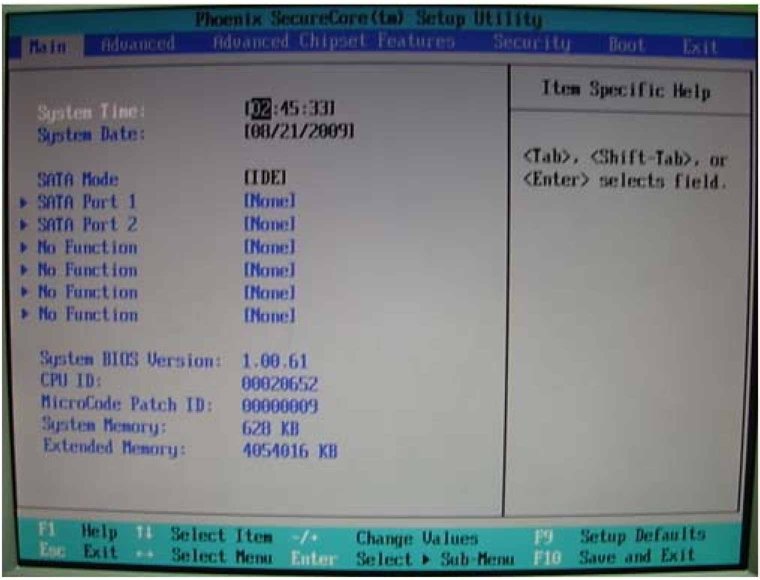
The motherboard uses the Phoenix BIOS for the system configuration. The Phoenix BIOS in the single board computer is a customized version of the industrial standard BIOS for IBM PC AT-compatible computers. It supports Intel x86 and compatible CPU architecture based processors and computers. The BIOS provides critical low-level support for the system central processing, memory and I/O sub-systems.

The BIOS setup program of the single board computer let the customers modify the basic configuration setting. The settings are stored in a dedicated battery-backed memory, NVRAM, retains the information when the power is turned off. If the battery runs out of the power, then the settings of BIOS will come back to the default setting.

The BIOS section of the manual is subject to change without notice and is provided here for reference purpose only. The settings and configurations of the BIOS are current at the time of print, and therefore they may not be exactly the same as that displayed on your screen.

To activate CMOS Setup program, press ＜DEL＞ key immediately after you turn on the system. The following message "Press DEL to enter SETUP" should appear in the lower left hand corner of your screen. When you enter the CMOS Setup Utility, the Main Menu will be displayed as **Figure 4-1**. You can use arrow keys to select your function, press ＜Enter＞ key to accept the selection and enter the sub-menu.

**Figure 4-1** CMOS Setup Utility Main Screen

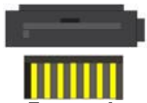


# Appendix A <I/O Port Pin Assignment>

## A.1 <Serial ATA Port>

Connector: **SATA1/2**

Type: 7-pin wafer connector




| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| GND | RSATA_TXP1 | RSATA_TXN1 | GND | RSATA_RXN1 | RSATA_RXP1 | GND |

## A.2 <IrDA Port>

Connector: **CN_IR**

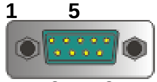
**Type: 5-pin header for SIR Ports**

***JCSEL1 must jump to "SIR"***

| Pin | Description |
|---|---|
| 1 | VCC |
| 2 | N/C |
| 3 | IRRX |
| 4 | Ground |
| 5 | IRTX |




## A.3 <Serial Port 1>

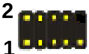



Connector: **COM1**

Type: 9-pin D-sub male connector on bracket

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | DCD- | 6 | DSR |
| 2 | SIN- | 7 | RTS |
| 3 | SO- | 8 | CTS |
| 4 | DTR- | 9 | RI |
| 5 | Ground | | |

## A.4 <Serial Port 2>

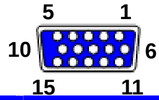



Connector: **CN_COM2**

Type: 9-pin header connector on bracket

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | DCD/422TX-/485 | 6 | DSR |
| 2 | RXD/422TX+/485+ | 7 | RTS |
| 3 | SO- /422RX+ | 8 | CTS |
| 4 | DTR- /422RX- | 9 | RI |
| 5 | Ground | | |

## A.5 <VGA Port>

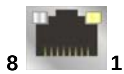



Connector: **CRT**

Type: 15-pin D-sub female connector on bracket

| Pin | Description | Pin | Description | Pin | Description |
|---|---|---|---|---|---|
| 1 | RED | 6 | Ground | 11 | N/C |
| 2 | GREEN | 7 | Ground | 12 | DDCDA |
| 3 | BLUE | 8 | Ground | 13 | HSYNC |
| 4 | N/C | 9 | N/C | 14 | VSYNC |
| 5 | Ground | 10 | Ground | 15 | DDCCLK |

## A.6 <LAN Port>

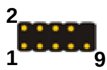



Connector: **RJ45**

Type: RJ45 connector with LED on bracket

| Pin | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Description | TRD0+ | TRD0- | TRD1+ | TRD2+ | TRD2- | TRD1- | TRD3+ | TRD3- |

## A.7 < USB Interface >



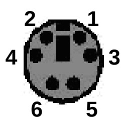

Connector: **CN_USB 3/4**

Type: 10-pin (5 x 2) header for dual USB Ports

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | VCC | 2 | VCC |
| 3 | Data0- | 4 | Data1- |
| 5 | Data0+ | 6 | Data1+ |
| 7 | Ground | 8 | Ground |
| 9 | Ground | 10 | N/C |

## A.8 < PS2 Port >

The PS/2 connector supports standard PS/2 keyboard directly or both PS/2 keyboard and mouse through for PS/2 Y-cable.




Connector: **PS2**

Type: 6-pin Mini-DIN connector on bracket

| Pin | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Description | KBCLK | MSCLK | GROUND | VCC | KBDATA | MSDATA |

# Appendix B <Flash BIOS>

## B.1 <Flash Tool>

The board is based on Phoenix BIOS and can be updated easily by the BIOS auto flash tool. You can download the tool online at the address below:

http://www.phoenix.com/en/home/
http://www.commell.com.tw/Support/Support_SBC.htm

File name of the tool is "Phlash16.exe", it's the utility that can write the data into the BIOS flash ship and update the BIOS.

## B.2 <Flash BIOS Procedure>

1. Please make a bootable floppy disk.
2. Get the last .bin files you want to update and copy it into the disk.
3. Copy Phlash16.exe to the disk.
4. Power on the system and flash the BIOS. (Example: C:/Phlash16 XXX.ROM)
5. Restart the system.

Any question about the BIOS re-flash please contact your distributors or visit the web-site at below:

http://www.commell.com.tw/support/support.htm

# Appendix C <System Resources>

## C.1 <I/O Port Address Map>

- [00000000 - 0000001F] Direct memory access controller
- [00000000 - 00000CF7] PCI bus
- [00000020 - 00000021] Programmable interrupt controller
- [00000024 - 00000025] Programmable interrupt controller
- [00000028 - 00000029] Programmable interrupt controller
- [0000002C - 0000002D] Programmable interrupt controller
- [0000002E - 0000002F] Motherboard resources
- [00000030 - 00000031] Programmable interrupt controller
- [00000034 - 00000035] Programmable interrupt controller
- [00000038 - 00000039] Programmable interrupt controller
- [0000003C - 0000003D] Programmable interrupt controller
- [00000040 - 00000043] System timer
- [0000004E - 0000004F] Motherboard resources
- [00000050 - 00000053] System timer
- [00000060 - 00000060] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
- [00000061 - 00000061] Motherboard resources
- [00000063 - 00000063] Motherboard resources
- [00000064 - 00000064] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
- [00000065 - 00000065] Motherboard resources
- [00000067 - 00000067] Motherboard resources
- [00000070 - 00000070] Motherboard resources
- [00000070 - 00000077] System CMOS/real time clock
- [00000080 - 00000080] Motherboard resources
- [00000081 - 00000091] Direct memory access controller
- [00000092 - 00000092] Motherboard resources
- [00000093 - 0000009F] Direct memory access controller
- [000000A0 - 000000A1] Programmable interrupt controller
- [000000A4 - 000000A5] Programmable interrupt controller
- [000000A8 - 000000A9] Programmable interrupt controller
- [000000AC - 000000AD] Programmable interrupt controller
- [000000B0 - 000000B1] Programmable interrupt controller
- [000000B2 - 000000B3] Motherboard resources
- [000000B4 - 000000B5] Programmable interrupt controller
- [000000B8 - 000000B9] Programmable interrupt controller
- [000000BC - 000000BD] Programmable interrupt controller
- [000000C0 - 000000DF] Direct memory access controller
- [000000F0 - 000000F0] Numeric data processor
- [00000274 - 00000277] ISAPNP Read Data Port
- [00000279 - 00000279] ISAPNP Read Data Port
- [000002F8 - 000002FF] Communications Port (COM2)
- [000003B0 - 000003BB] Intel(R) HD Graphics
- [000003C0 - 000003DF] Intel(R) HD Graphics
- [000003F8 - 000003FF] Communications Port (COM1)
- [00000400 - 0000047F] Motherboard resources
- [000004D0 - 000004D1] Programmable interrupt controller
- [00000500 - 0000050F] Motherboard resources
- [00000600 - 00000603] Motherboard resources
- [00000680 - 0000069F] Motherboard resources
- [000006A0 - 000006AF] Motherboard resources
- [000006B0 - 000006FF] Motherboard resources
- [00000A79 - 00000A79] ISAPNP Read Data Port

[00000D00 - 0000FFFF] PCI bus
[00001180 - 000011FF] Motherboard resources
[0000164E - 0000164F] Motherboard resources
[00006C00 - 00006C1F] Intel(R) 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
[00006C20 - 00006C2F] Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B2E
[00006C30 - 00006C3F] Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B2E
[00006C40 - 00006C4F] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
[00006C50 - 00006C5F] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
[00006C60 - 00006C67] Intel(R) HD Graphics
[00006C70 - 00006C73] Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B2E
[00006C74 - 00006C77] Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B2E
[00006C78 - 00006C7F] Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B2E
[00006C80 - 00006C87] Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B2E
[00006C88 - 00006C8B] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
[00006C8C - 00006C8F] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
[00006C90 - 00006C97] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
[00006C98 - 00006C9F] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
[00007000 - 0000701F] Intel(R) 82574L Gigabit Network Connection #4
[00007000 - 00007FFF] Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 1 - 3B42
[0000FE00 - 0000FE00] Motherboard resources
[0000FFFF - 0000FFFF] Motherboard resources

# C.2 <Memory Address Map>

[000A0000 - 000BFFFF] Intel(R) HD Graphics
[000A0000 - 000BFFFF] PCI bus
[000D0000 - 000D3FFF] PCI bus
[000D4000 - 000D7FFF] PCI bus
[000D8000 - 000DBFFF] PCI bus
[C0000000 - C0000FFF] Motherboard resources
[C0000000 - FEAFFFFF] PCI bus
[D0000000 - DFFFFFFF] Intel(R) HD Graphics
[E0000000 - EFFFFFFF] Motherboard resources
[F0000000 - F03FFFFF] Intel(R) HD Graphics
[F0400000 - F041FFFF] Intel(R) 82574L Gigabit Network Connection #4
[F0400000 - F04FFFFF] Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 1 - 3B42
[F0420000 - F0423FFF] Intel(R) 82574L Gigabit Network Connection #4
[F0700000 - F0703FFF] Microsoft UAA Bus Driver for High Definition Audio
[F0707000 - F07073FF] Intel(R) 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B3C
[F0708000 - F07083FF] Intel(R) 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B34
[F0709000 - F07090FF] Intel(R) 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
[F070A000 - F070AFFF] Motherboard resources
[F0800000 - F09FFFFF] Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 1 - 3B42
[FED00000 - FED003FF] High precision event timer
[FED10000 - FED13FFF] Motherboard resources
[FED18000 - FED18FFF] Motherboard resources
[FED19000 - FED19FFF] Motherboard resources
[FED1C000 - FED1FFFF] Motherboard resources
[FED20000 - FED3FFFF] Motherboard resources
[FED40000 - FED44FFF] Motherboard resources
[FED45000 - FED8FFFF] Motherboard resources
[FED90000 - FED93FFF] Motherboard resources
[FEE00000 - FEEFFFFF] Motherboard resources
[FF000000 - FFFFFFFF] Intel(R) 82802 Firmware Hub Device
[FF000000 - FFFFFFFF] Motherboard resources

# C.3 <System DMA & IRQ Resources>

## DMA:

4 Direct memory access controller

## IRQ:

(ISA) 0 High precision event timer
(ISA) 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
(ISA) 3 Communications Port (COM2)
(ISA) 4 Communications Port (COM1)
(ISA) 8 High precision event timer
(ISA) 9 Microsoft ACPI-Compliant System
(ISA) 12 PS/2 Compatible Mouse
(ISA) 13 Numeric data processor
(PCI) 5 Intel(R) 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
(PCI) 16 Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 1 - 3B42
(PCI) 16 Intel(R) 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B3C
(PCI) 16 Intel(R) 82574L Gigabit Network Connection #4
(PCI) 16 Intel(R) HD Graphics
(PCI) 19 Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
(PCI) 19 Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B2E
(PCI) 22 Microsoft UAA Bus Driver for High Definition Audio
(PCI) 23 Intel(R) 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B34

# Appendix D <Programming GPIO's>

The GPIO'can be programmed with the MSDOS debug program using simple IN/OUT commands.The following lines show an example how to do this.

GPIO0…..GPIO7 bit0……bit7

-o 2 E 87 ;enter configuration

-o 2E 87

-o 2E 07

-o 2F 09 ;enale GPIO function

-o 2E 30

-o 2F 02 ;enable GPIO configuration

-o 2E F0

-o 2F xx ;set GPIO as input/output; set '1' for input,'0'for output

-o 2E F1

-o 2F xx ;if set GPIO's as output,in this register its value can be set

Optional :

-o 2E F2

-o 2F xx ; Data inversion register ; '1' inverts the current valus of the bits ,'0' leaves them as they are

-o 2E 30

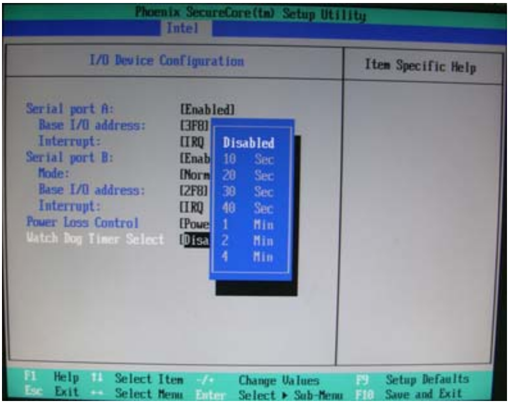
-o 2F 01 ; active GPIO's

For further information ,please refer to Winbond W83627DHG datasheet.

# Appendix E <Programming Watchdog Timer >

The watchdog timer makes the system auto-reset while it stops to work for a period.

The integrated watchdog timer can be setup as system reset mode by program.




**Timeout Value Range**
- 1 to 255
- Second or Minute

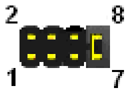
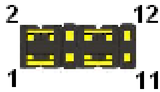
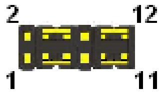
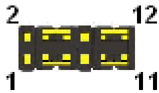
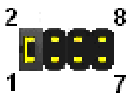
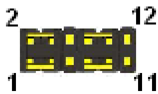
**Program Sample**
Watchdog timer setup as system reset with 5 second of timeout

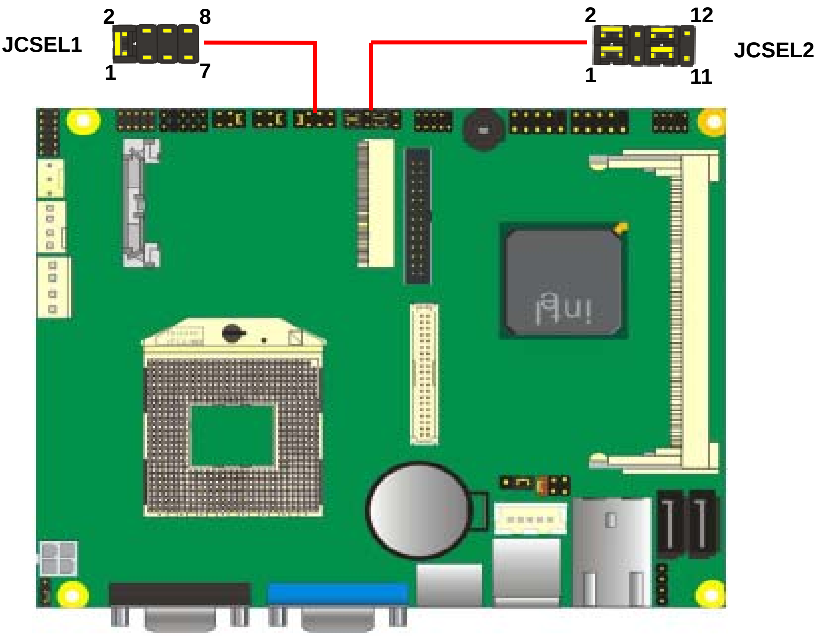
| | |
|---|---|
| 2E, 87 | |
| 2E, 87 | |
| 2E, 07 | |
| 2F, 08 | Logical Device 8 |
| 2E, 30 | Activate |
| 2F, 01 | |
| 2E, F5 | Set as Second* |
| 2F, 00 | |
| 2E, F6 | Set as 5 |
| 2F, 05 | |

* Minute: bit 3 = 0; Second: bit 3 = 1

You can select Timer setting in the BIOS, after setting the time options, the system will reset according to the period of your selection.

# Appendix F <How to setting RS-232/RS-422/RS-485>

| Function | JCSEL2 | JCSEL1 |
|---|---|---|
| IrDA |  |  |
| RS-422 |  |  |
| RS-485 |  |  |
| RS-232 |  |  |



# Contact Information

Any advice or comment about our products and service, or anything we can help you please don't hesitate to contact with us. We will do our best to support you for your products, project a business.

## Taiwan Commate Computer Inc.


| | |
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| TEL | +886-2-26963909 |
| FAX | +886-2-26963911 |
| Website | http://www.commell.com.tw |
| E-Mail | info@commell.com.tw (General Information)<br>tech@commell.com.tw (Technical Support) |


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